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(54) DOUBLE MOTOR DOUBLE IMPELLER BOOSTER FAN

(57) The present invention discloses a double-motor double-blade booster fan, including: a fan outer frame, a rotating mechanism installed in a center position of the fan outer frame, and a wire electrically connected with the rotating mechanism and having a USB interface, wherein the rotating mechanism includes a motor bracket; a first motor and a second motor arranged on both ends of the motor bracket respectively; a shifting yoke installed on the motor bracket; a first blade installed on an output shaft of the first motor; and a second blade installed on an output shaft of the second motor, wherein the first blade includes a first axle center and first leaf blades uniformly dispersed on an outer circumference of the first axle center, and the second blade includes a second axle center and second leaf blades uniformly dispersed on an outer circumference of the second axle center. The present invention not only has simple structure and stable performance, but also has larger wind volume and wind pressure than those of a traditional single-blade booster fan, is a design that integrates efficacy and energy saving and has great market application and popularization values.

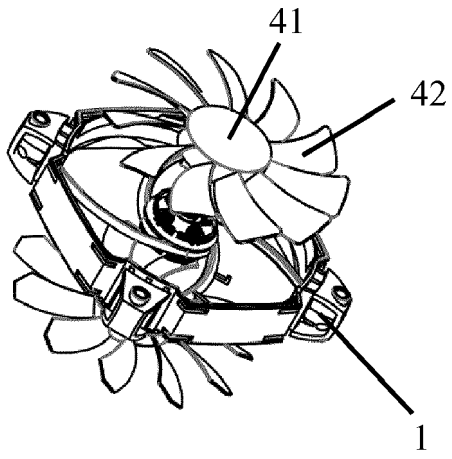

FIG.7

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of electrical appliances, and more particularly relates to a double-motor double-blade booster fan.

BACKGROUND

[0002] Personal computers have a history of twenty or thirty years since its introduction into a market. Heat dissipation is always an important problem. As the efficacy of CPU, graphics cards, power supplies and the like is gradually increased along with scientific and technological progress, internal temperature of a computer case is more and more high. Heat dissipation is always a problem most valued by users. However, an air flow principle of a fan is a most direct and effective solution.

[0003] Generally, a traditional fan produces an air flow by that a motor drives a blade to rotate. However, one blade can only produce an air flow in a single direction, causing that a convection effect of the produced air flow is limited and effective air supply and heat dissipation effects cannot be achieved. If a plurality of electric fans are placed, spaces are occupied and power is consumed.

[0004] A patent literature with an application No. CN201320041662.4 discloses a double-blade mini fan. Although wind power of the fan can be effectively increased through an interaction between two blades, because the blades and a motor are placed in a containing space formed by a front frame and a fear frame in the invention, thickness of the fan is increased and an appearance is not beautiful while a structure is complicated and maintenance is not easy. Moreover, a fixing component of the motor is inclined to one side, which is easy to cause a problem of damage to the blades caused by inclination of the motor after long-term use.

[0005] Therefore, the problem to be urgently solved by those skilled in the art is how to provide a double-motor double-blade booster fan with simple structure and stable performance.

SUMMARY

[0006] In view of this, the present invention provides a double-motor double-blade booster fan.

[0007] To achieve the above purpose, the present invention adopts the following technical solution:

[0008] A double-motor double-blade booster fan comprises a fan outer frame, a rotating mechanism installed in a center position of the fan outer frame, and a wire electrically connected with the rotating mechanism and having a USB interface, wherein the rotating mechanism comprises a motor bracket; a first motor and a second motor arranged on both ends of the motor bracket respectively; a shifting yoke installed on the motor bracket; a first blade installed on an output shaft of the first motor; and a second blade installed on an output shaft of the second motor, wherein the first blade comprises a first axle center and first leaf blades uniformly dispersed on an outer circumference of the first axle center, and the second blade comprises a second axle center and second leaf blades uniformly dispersed on an outer circumference of the second axle center.

[0009] Preferably, screw holes are formed uniformly at the outer circumference of the fan outer frame in the double-motor double-blade booster fan.

[0010] Preferably, the motor bracket is fixedly connected with the fan outer frame in the double-motor double-blade booster fan.

[0011] Preferably, the first blade and the second blade rotate in opposite directions, and a distance of 50 to 150 mm is kept between the first blade and the second blade in the double-motor double-blade booster fan.

[0012] Preferably, a switch button is installed on one side of the fan outer frame and is electrically connected with the rotating mechanism in the double-motor double-blade booster fan.

[0013] Preferably, the number of the first leaf blades and the number of the second leaf blades are designed according to fluid dynamics to effectively inhibit generation of noise in the double-motor double-blade booster fan.

[0014] It is known from the above technical solution that compared with the prior art, the present invention discloses and provides a double-motor double-blade booster fan. Firstly, the first blade is driven through the first motor to make forward rotation. The second motor drives the second blade through the shifting yoke to make reverse rotation. An air flow collected by the first blade is subjected to reverse boosting to form an air flow beam to obtain higher wind pressure to be converted into wind and discharged. The wind pressure can be effectively enhanced through an interaction between the first blade and the second blade to accelerate air flow, so that a better heat dissipation effect is obtained for heat dissipation components.

[0015] Secondly, a distance of 50 to 150 mm is kept between the first blade and the second blade, and the shifting yoke is installed on the motor bracket. When the first motor drives the first blade and the second motor drives the second blade through the shifting yoke to make reverse rotation, opposite torques generated by rotation operations of the first blade and the second blade just cancel each other to avoid instable performance caused by shake of the booster fan in a use process, thereby effectively prolonging service life of the booster fan.

[0016] Then, the number of the first leaf blades and the number of the second leaf blades are large, wind volume is increased, and meanwhile, because the first leaf blades and the second leaf blades are designed according to fluid dynamics, generation of noise can be effectively inhibited and then the noise generated by the booster fan during operation is reduced.

[0017] Finally, the motor bracket of the present inven-

tion is not inclined to one side like a fixing component of a traditional fan, so that the first blade and the second blade can be operated in the center position of the fan outer frame, thereby effectively avoiding a problem of damage to the blades caused by inclination of the motor after long-term use.

[0018] The present invention integrates simple structure and stable performance. Mandatory boosting is performed by using a double-motor double-blade structure. The present invention not only has larger wind volume and wind pressure than those of a traditional single-blade booster fan, but also has lower rotational speed than that of the traditional single-blade booster fan under the same wind pressure or wind volume condition. Moreover, the present invention saves energy, and is a design that integrates efficacy and energy saving.

DESCRIPTION OF THE DRAWINGS

[0019] To more clearly describe the technical solution in the embodiments of the present invention or in the prior art, the drawings required to be used in the description of the embodiments or the prior art will be simply presented below. Apparently, the drawings in the following description are merely the embodiments of the present invention, and for those ordinary skilled in the art, other drawings can also be obtained according to the provided drawings without contributing creative labor.

Fig. 1 is a structural schematic diagram 1 of the present invention.

Fig. 2 is a structural schematic diagram 2 of the present invention.

Fig. 3 is a structural schematic diagram 1 of a motor bracket of the present invention.

Fig. 4 is a structural schematic diagram 2 of a motor bracket of the present invention.

Fig. 5 is a structural schematic diagram 1 of disassembly of the present invention.

Fig. 6 is a structural schematic diagram 2 of disassembly of the present invention.

Fig. 7 is a structural schematic diagram 3 of disassembly of the present invention.

Fig. 8 is a schematic diagram of a working principle of the present invention.

Fig. 9 is a schematic diagram of a structural framework of the present invention.

DETAILED DESCRIPTION

[0020] The technical solution in the embodiments of the present invention will be clearly and fully described below in combination with the drawings in the embodiments of the present invention. Apparently, the described embodiments are merely part of the embodiments of the present invention, not all of the embodiments. Based on the embodiments in the present invention, all other embodiments obtained by those ordinary skilled in the art without contributing creative labor will belong to the protection scope of the present invention.

[0021] Embodiments of the present invention disclose a double-motor double-blade booster fan. The double-motor double-blade booster fan not only has simple structure and stable performance, but also has larger wind volume and wind pressure than those of a traditional single-blade booster fan, is a design that integrates efficacy and energy saving and has great market application and popularization values.

[0022] See Fig. 1 and Fig. 2 of the description for details. A double-motor double-blade booster fan provided in the present invention specifically comprises:

a fan outer frame 1, a rotating mechanism 2 installed in a center position of the fan outer frame 1, and a wire 3 (circuit connection) electrically connected with the rotating mechanism 2 and having a USB interface, wherein the rotating mechanism 2 comprises a motor bracket 21; a first motor 22 and a second motor 23 arranged on both ends of the motor bracket 21 respectively; a shifting yoke 211 installed on the motor bracket 21; a first blade 4 installed on an output shaft of the first motor 22; and a second blade 5 installed on an output shaft of the second motor 23, wherein the first blade 4 comprises a first axle center 41 and first leaf blades 42 uniformly dispersed on an outer circumference of the first axle center 41, and the second blade 5 comprises a second axle center 51 and second leaf blades 52 uniformly dispersed on an outer circumference of the second axle center 51.

[0023] See Fig. 7 for a disassembly structure of the first blade 4 and Fig. 5 for a disassembly structure of the second blade 5.

[0024] In addition, the motor bracket 21 of the present invention is not inclined to one side like a fixing component of a traditional fan, so that the first blade 4 and the second blade 5 can be operated in the center position of the fan outer frame, thereby effectively avoiding a problem of damage to the blades caused by inclination of the motor after long-term use.

[0025] With reference to Fig. 8, the first blade 4 is driven through the first motor 22 to make forward rotation. The second motor 23 drives the second blade 5 through the shifting yoke 211 to make reverse rotation. An air flow collected by the first blade 4 is subjected to reverse boosting to form an air flow beam to obtain higher wind pressure to be converted into wind and discharged. The wind pressure can be effectively enhanced through an interaction between the first blade 4 and the second blade 5 to accelerate air flow, so that a better heat dissipation effect is obtained for heat dissipation products.

[0026] To further optimize the above technical solution, screw holes 11 are formed uniformly at the outer circumference of the fan outer frame 1.

[0027] The design of the screw holes 11 can ensure

that the booster fan is simply and conveniently installed on components that need heat dissipation.

[0028] With reference to Fig. 3, to further optimize the above technical solution, the motor bracket 21 is fixedly connected with the fan outer frame 1.

[0029] To further optimize the above technical solution, the first blade 4 and the second blade 5 rotate in opposite directions, and a distance of 50 to 150 mm is kept between the first blade 4 and the second blade 5.

[0030] It should be noted that, a distance of 50 to 150 mm is kept between the first blade 4 and the second blade 5, and the shifting yoke 211 is installed on the motor bracket 21. When the first motor 22 drives the first blade 4 and the second motor 23 drives the second blade 5 through the shifting yoke 211 to make reverse rotation, opposite torques generated by rotation operations of the first blade 4 and the second blade 5 just cancel each other to avoid instable performance caused by shake of the booster fan in a use process, thereby effectively prolonging service life of the booster fan.

[0031] To further optimize the above technical solution, a switch button 6 is installed on one side of the fan outer frame 1 and is electrically connected with the rotating mechanism 2.

[0032] The booster fan is connected with the heat dissipation components through the wire 3 having the USB interface. The switch button 6 is turned on so that the first motor 22 and the second motor 23 on the rotating mechanism 2 start to operate for respectively driving the first blade 4 and the second blade 5 to make reverse rotation, thereby effectively increasing the wind pressure and accelerating air flow, so that a better heat dissipation effect is obtained for the heat dissipation components.

[0033] With reference to Fig. 5 and Fig. 7, to further optimize the above technical solution, the number of the first leaf blades 42 and the number of the second leaf blades 52 are designed according to fluid dynamics to effectively inhibit generation of noise.

[0034] The number of the first leaf blades 42 and the number of the second leaf blades 52 are large, wind volume is increased, and meanwhile, because the first leaf blades 42 and the second leaf blades 52 are designed according to fluid dynamics, generation of noise can be effectively inhibited and then the noise generated by the booster fan during operation is reduced.

[0035] Each embodiment in the description is described in a progressive way. The difference of each embodiment from each other is the focus of explanation. The same and similar parts among all of the embodiments can be referred to each other. For a device disclosed by the embodiments, because the device corresponds to a method disclosed by the embodiments, the device is simply described. Refer to the description of the method part for the related part.

[0036] The above description of the disclosed embodiments enables those skilled in the art to realize or use the present invention. Many modifications to these embodiments will be apparent to those skilled in the art. The general principle defined herein can be realized in other embodiments without departing from the spirit or scope of the present invention. Therefore, the present invention will not be limited to these embodiments shown herein, but will conform to the widest scope consistent with the principle and novel features disclosed herein.

Claims

1. A double-motor double-blade booster fan, comprising: a fan outer frame (1),a rotating mechanism (2) installed in a center position of the fan outer frame (1), and a wire (3) electrically connected with the rotating mechanism (2) and having a USB interface, wherein the rotating mechanism (2) comprises a motor bracket (21); a first motor (22) and a second motor (23) arranged on both ends of the motor bracket (21) respectively; a shifting yoke (211) installed on the motor bracket (21); a first blade (4) installed on an output shaft of the first motor (22); and a second blade (5) installed on an output shaft of the second motor (23),wherein the first blade (4) comprises a first axle center (41) and first leaf blades (42) uniformly dispersed on an outer circumference of the first axle center (41),and the second blade (5) comprises a second axle center (51) and second leaf blades (52) uniformly dispersed on an outer circumference of the second axle center (51).

2. The double-motor double-blade booster fan according to claim 1, wherein screw holes (11) are formed uniformly at the outer circumference of the fan outer frame (1).

3. The double-motor double-blade booster fan according to claim 1, wherein the motor bracket (21) is fixedly connected with the fan outer frame (1).

4. The double-motor double-blade booster fan according to claim 1, wherein the first blade (4) and the second blade (5) rotate in opposite directions, and a distance of 50 to 150 mm is kept between the first blade (4) and the second blade (5).

5. The double-motor double-blade booster fan according to claim 1, wherein a switch button (6) is installed on one side of the fan outer frame (1) and is electrically connected with the rotating mechanism (2).

6. The double-motor double-blade booster fan according to claim 1, wherein the number of the first leaf blades (42) and the number of the second leaf blades (52) are designed according to fluid dynamics to effectively inhibit generation of noise.

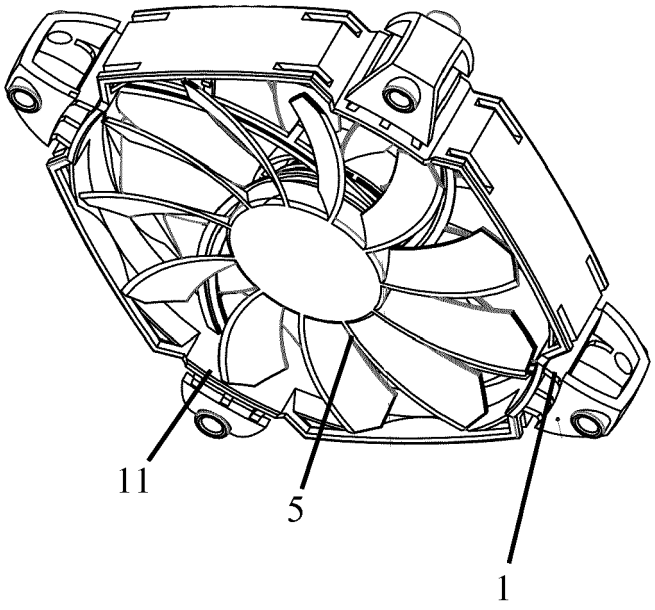

FIG. 1

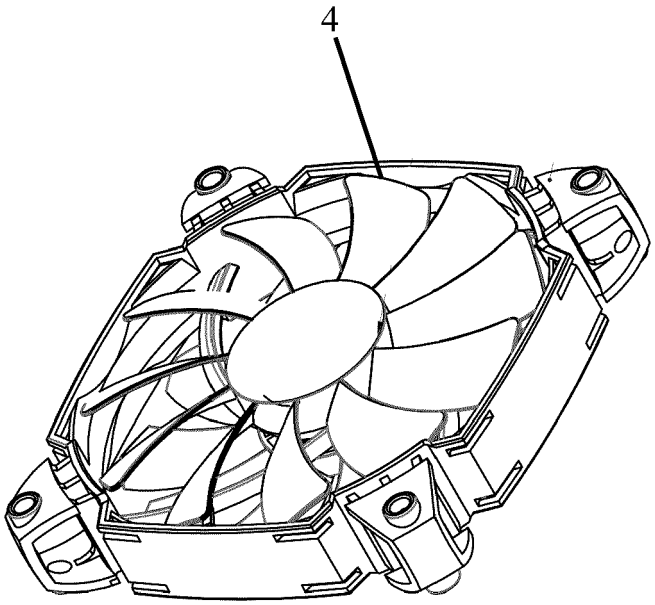

FIG. 2

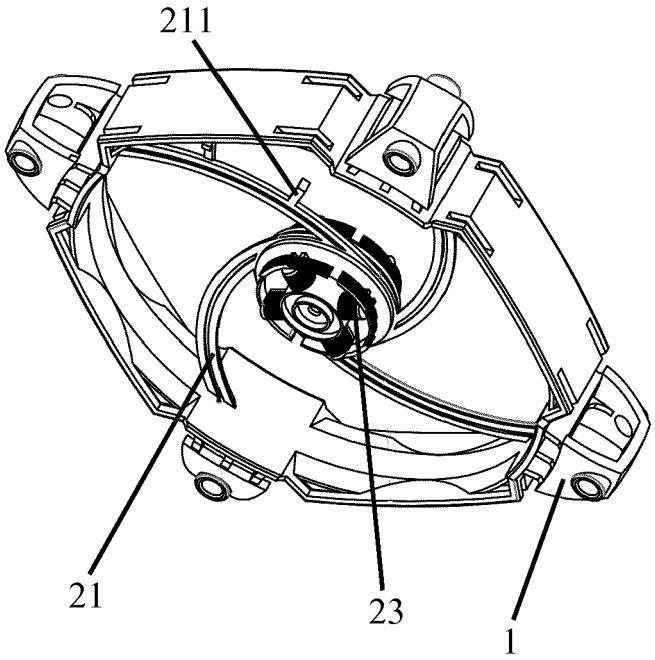

FIG. 3

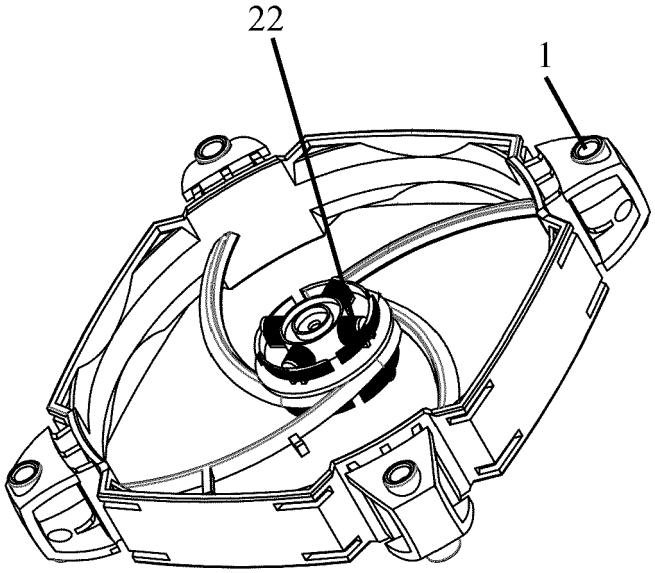

FIG. 4

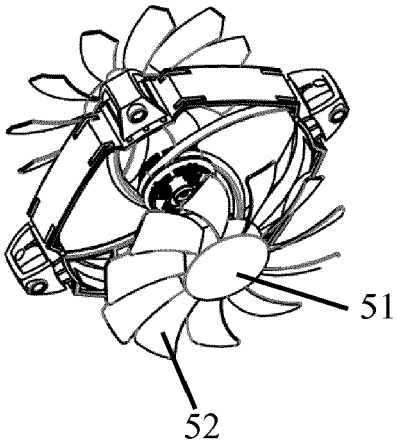

FIG. 5

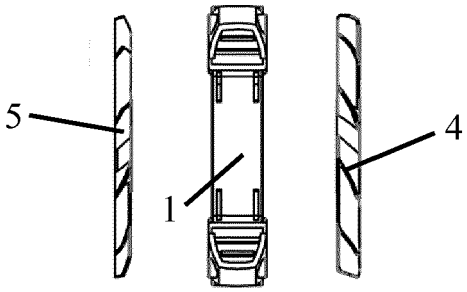

FIG. 6

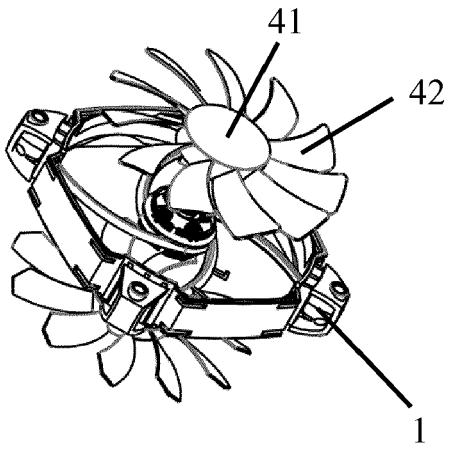

FIG.7

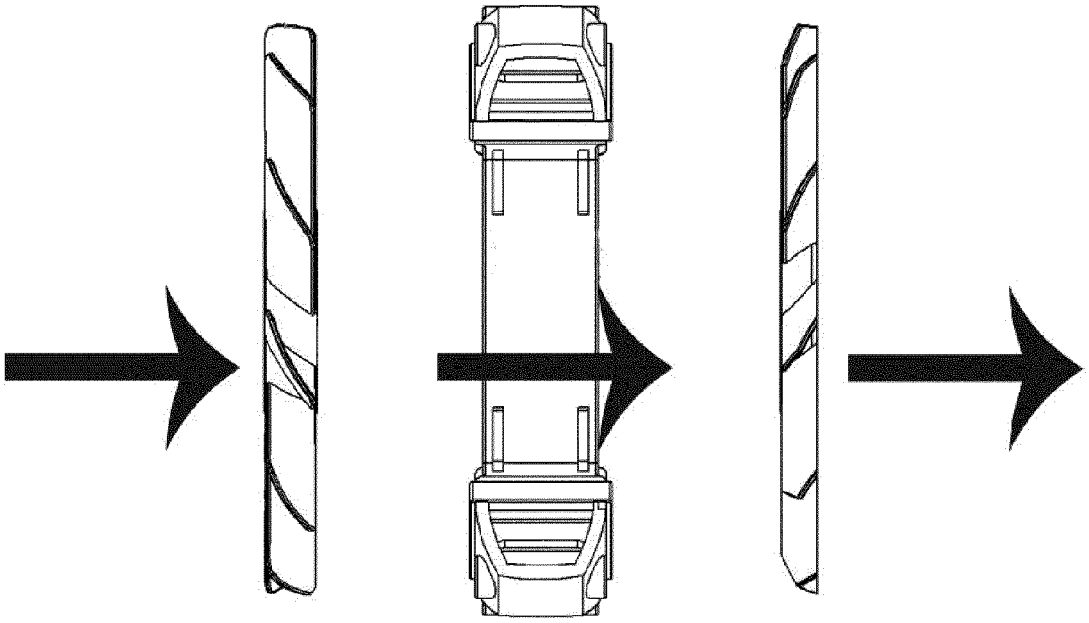

FIG. 8

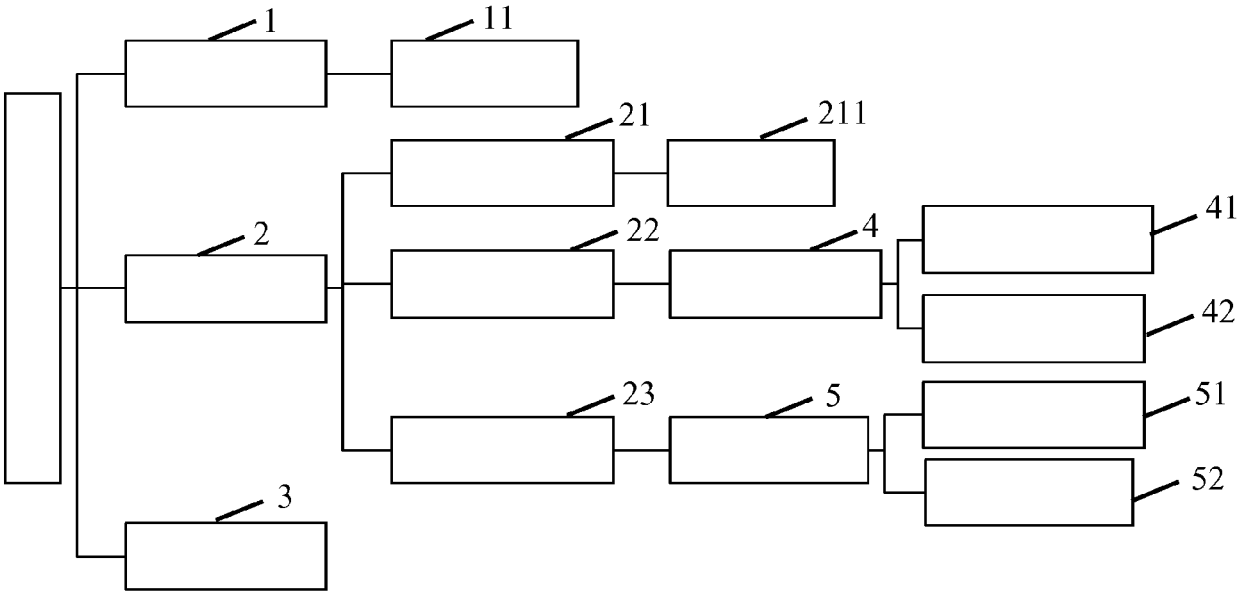

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 17 02 0437

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	US 2003/133791 A1 (HUANG WEN-SHI [TW] ET AL) 17 July 2003 (2003-07-17) * figure 3 * * paragraphs [0004], [0020], [0022] * -----	1-6	
			TECHNICAL FIELDS SEARCHED (IPC) F04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 March 2018	de Verbigier, L

CATEGORY OF CITED DOCUMENTS

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